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WATER SUPPLY OUTLOOK

and
FEDERAL - STATE - PRIVATE COOPERATIVE SNOW SURVEYS

for
IDAHO

UNITED STATES DEPARTMENT of AGRICULTURE...SOIL CONSERVATION SERVICE.

and

IDAHO STATE RECLAMATION ENGINEER

Data included in this report were obtained by the agency named above in cooperation with the Comptroller of Water Rights of British Columbia, and Federal, State and private organizations listed on the last page of this report.

MAY 1, 1963

UNITED STATES DEPARTMENT OF AGRICULTURE - SOIL CONSERVATION SERVICE

To Recipients of Water Supply Outlook Reports:

The climate of the cultivated and populated areas of the West is characterized by relatively dry summer months. Such precipitation as occurs falls mostly in the winter and early spring months when it is of little immediate benefit to growing crops. Most of this precipitation falls as mountain snow which stays on the ground for months, melting later to sustain streamflow during the period of greatest demand during late spring and summer. Thus, nature provides in mountain snow an imposing water storage facility.

The amount of water stored in mountain snow varies from place to place as well as from year to year and accordingly, so does the runoff of the streams. The best seasonal management of variable western water supplies results from advance estimates of the streamflow.

A snow survey consists of a series of about ten samples taken with specially designed snow sampling equipment along a permanently marked line, up to 1000 feet in length, called a snow course. The use of snow sampling equipment provides snow depth and water equivalent values for each sampling point. The average of these values is reported as the snow survey measurement for a snow course.

Snow surveys are made monthly or semi-monthly beginning in January or February and continue through the snow season until April, May or June. Currently more than 1400 western snow courses are measured each year. These measurements furnish the key data for water supply forecasts.

Streamflow forecasts are obtained by a comparison of total or maximum snow accumulation, as measured by snow water equivalent, to the subsequent spring and summer or snowmelt season runoff over a period of years. The snow water equivalent measured in selected snow courses provides most of the index to the streamflow forecast for the following season. More accurate forecasts are usually obtained when other factors such as soil moisture, base flow and spring precipitation are considered and included in the forecast procedure. Early season forecasts assume average climatic conditions through the snowmelt season.

Listed below are the Federal-State-Private Cooperative Snow Survey and Water Supply Forecast reports available for the West which contain detailed information on snow survey measurements, streamflow forecasts, reservoir storage, soil moisture and other guide data to water management and conservation decisions. Soil Conservation Service Reports may be secured from Water Supply Forecasting Unit, Soil Conservation Service, P.O. Box 4170, Portland 8, Oregon.

PUBLISHED BY SOIL CONSERVATION SERVICE

	FOBEISHED BY SOIL	CONSERVATION SERVICE	
REPORTS	ISSUED	LOCATION	COOPERATING WITH
RIVER BASINS			
WESTERN UNITED STATES	MONTHLY (FEBMAY)	PORTLANO, OREGON	_ ALL COOPERATORS
STATES			
AL ASK A	MONTHLY (MAR MAY)	PALMER. ALASKA	_ ALASKA S.C.D.
AR I ZON A	SEMI-MONTHLY (JAN.15 - APR.1)	PHOENIX, ARIZONA	SALT R. VALLEY WATER USERS ASSOC. ARIZ, AGR. EXP. STATION
COLORADO ANO NEW MEXICO	MONTHLY (FEBMAY)	FORT COLLINS, COLORADO	- COLO. STATE UNIVERSITY COLO. STATE ENGINEER N. MEX. STATE ENGINEER
IOAHO	MONTHLY (JANJUNE)_	BOISE, IOAHO	_ IOAHO STATE RECLAMATION ENGINEER
MONTANA	MONTHLY (JANJUNE)	BOZEMAN, MONTANA	MONT. AGR. EXP. STATION
NEVAGA	MONTHLY (JANMAY)	RENO, NEVAOA	NEVAGA DEPT. OF CONSERVATION AND NATURAL RESOURCES - DIVISION OF WATER RESOURCES
ORE GON	_ MONTHLY (JANJUNE)_	PORTLAND, OREGON	OREG. STATE UNIVERSITY OREGON STATE ENGINEER
UTAH	_ MONTHLY (JANJUNE)_	SALT LAKE CITY, UTAH	UTAH STATE ENGINEER
WASHINGTON	MONTHLY (FEB JUNE)_	SPOKANE, WASHINGTON	_ WN. STATE DEPT. OF CONSERVATION
WYOMING	_ MONTHLY (FEBJUNE)	_ CASPER, WYOMING	_ WYOMING STATE ENGINEER
	PUBLISHED B	Y OTHER AGENCIES	
REPORTS	ISSUED		AGENCY
BRITISH COLUMBIA	_ MONTHLY (FEBJUNE)	WATER RIGHTS BR. NATURAL RESOURCE B.C., CANADA	, DEPT. OF LANOS, FORESTS AND S, PARLIAMENT BLOG., VICTORIA,
CALIFORNIA	_MONTHLY (FEBMAY)	CALIF. DEPT. OF	WATER RESOURCES, P.O. BOX 388,

SACRAMENTO, CALIF.

WATER SUPPLY OUTLOOK

FEDERAL - STATE - PRIVATE COOPERATIVE SNOW SURVEYS for

IDAHO

Report prepared by

MORLAN W. NELSON Snow Survey Supervisor

and

J. ALDEN WILSON Asst. Snow Survey Supervisor

SOIL CONSERVATION SERVICE SNOW SURVEY SECTION BOX 1247, BOISE, IDAHO

Issued by

LEE T. MORGAN

STATE CONSERVATIONIST
SOIL CONSERVATION SERVICE
BOISE, IDAHO

GEORGE N. CARTER
STATE RECLAMATION ENGINEER
DEPARTMENT OF RECLAMATION
BOISE, IDAHO



WATER SUPPLY OUTLOOK for IDAHO



GENERAL SUMMARY - MAY 1, 1963

The water supply outlook for Idaho has improved on all streams and rivers. Heavy snowfall and precipitation during April eliminated one irrigation and added snow-water at the high elevations throughout the mountains. The main stem of the Snake, Boise, Payette and Owyhee Rivers with good storage facilities, are assured of near normal supplies for 1963. The smaller streams and rivers, without adequate storage facilities, are forecast to have water shortages this season unless unusually heavy rains continue through May and June. Streamflow forecasts for the May through September period vary from 19% of normal on the Owyhee River to 82% on Henry's Fork. These forecasts are still well below normal but a definite increase from April 1.

The combination of complex storm patterns, variable soil moisture conditions, generally warm temperatures, and widely fluctuating streamflow has produced a most unusual winter season.

At the high elevation snow courses, snow-water increased significantly during April when it would ordinarily decrease. This is most unusual but very welcome in 1963 after several consecutive months of extremely light snowfall. Several of these courses, near the tops of the mountains, had more snowfall in April than any other month this season.

U. S. Geological Survey preliminary figures show low streamflow during April. Snow cover at the middle and low elevations disappeared and precipitation at

most stations was over 200% of normal, but proportionate runoff did not result. This is explained in part by the dry soil conditions and cool temperatures prevailing on the watersheds prior to and during the heavy storms of the past month.

Soils at middle and low elevations have more moisture content now, and further rains could add slightly to the water supply predictions.

The forecasts do not reflect the snow cover measured on the high elevation courses at this time because the dry soil beneath the snow pack is expected to absorb an unusually high amount of melting snow-water.

Water users in general are encouraged to use their water supplies conservatively and carry-over as much as possible into the 1964 season.

TIMING IRRIGATIONS

Ъу

Meader H. Wilkins, State Conservation Engineer Soil Conservation Service

The right amount of water at the right time is what produces quality and quantity crops. There is a critical time for each crop when too low a moisture level will lower one or both quality and quantity. Very few crops will respond favorably to too excess water.

Alfalfa and grass for forage will tolerate a wide fluctuation in moisture level. They have a luxury use of water which means slightly more growth at high levels but with very poor efficiency of water use. Low moisture levels reduce quantity but do not permanently injure most grasses. Moisture levels for grass seed production, however, are similar to grain. A high moisture level at bloom stage may cause blooms to drop and a poor set of seed will result. High moisture levels are needed at the joint, boot, and soft dough stages.

The critical time for corn to be maintained at a high moisture level is from tassel to silk stage. High moisture level means 50% or more of field capacity, not saturated. Saturation of soil stops root growth and slows top growth.

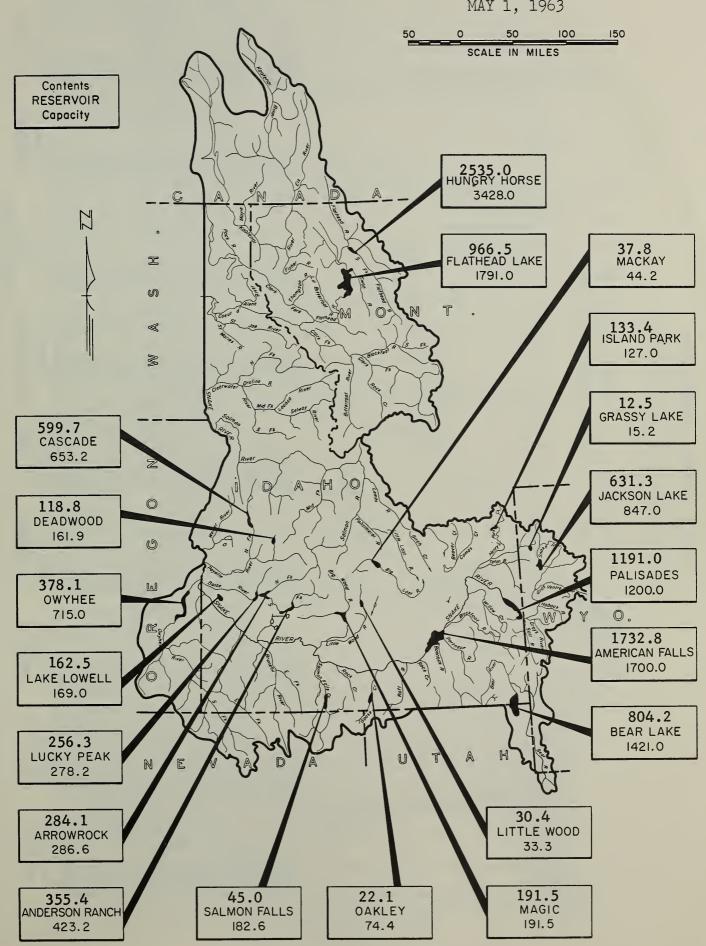
Sugar beets require a high moisture level during germination, but can tolerate low moisture levels late in the season. Potatoes are our Prima Donna crop requiring a high, very even moisture level from planting time almost to harvest. Letting tubers get dry or allowing moisture levels to fluctuate when they are forming will produce knobby and deformed potatoes.

A review of your Conservation Plan with your Work Unit Conservationist may help you save some water dollars.

RESERVOIR STORAGE

USABLE CONTENTS (1,000 Acre Feet)

MAY 1, 1963



WATER SUPPLY FORECASTS MAY THROUGH SEPTEMBER PERIOD Based on Snow Surveys made on approximately MAY 1, 1963

This Yeors Forecost

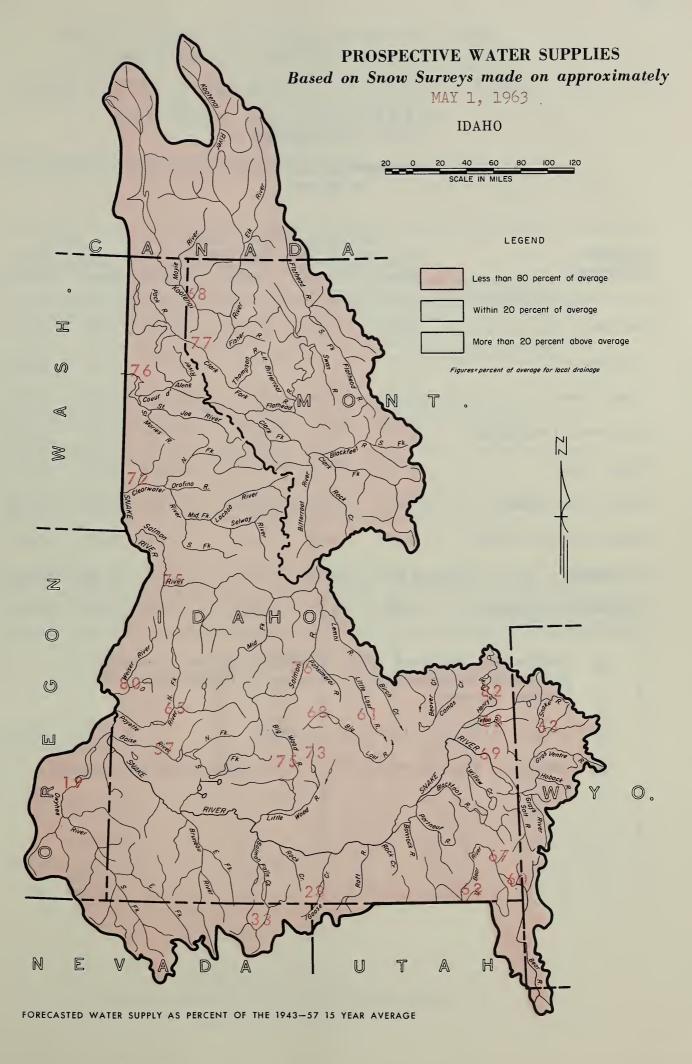
15 Yr. Average Flow 1943-57

Lost Yeors Flow

123 Flow in Thousands of Acre Feet

200 001 150 50 Clearwater R. at Spalding 6669 1911 at Whitebird Salmon R. 2541 8359 Horseshoe Bend 0901 Payette R. near 1521 1624 above Diversion Boise R. 9201 1597 Big Wood R. at Hailey 112 543 Big Lost R. near Mackay 901 821 191 near Heise Snake R. 0292 8175 at Post Falls Spokane R. 6971 2128 Kootenai R. at Leonia 1299 **266**7 200 150 00 90 PERCENT of 1943-57 AVERAGE

PERCENT of 1943 - 57 AVERAGE



VALLEY PRECIPITATION 1/
Division Averages and Departures
In Inches

	Fa	11	Win	ter	Spring		
DRAINAGE	SepNo	ov 1962	Dec. '62	-Mar. '63	April	1963	
DIVISIONS	Avg.2/	Dep. <u>3</u> /	Avg.2/	Dep. <u>3/</u>	Avg.2/	Dep. <u>3/</u>	
							
Kootenai	1.87	-0.62	8.12	-2.46	1.53	+0.08	
Flathead	2.01	+0.23	7.62	-0.03	1.25	-0.25	
Clark Fork	0.74	+0.04	3.37	-0.11	0.65	-0.22	
Pend Oreille-Spokane	4.12	+0.84	11.89	-2.49	2.60	+0.51	
Upper Snake	2.26	+0.28	6.23	-0.84	3.24	+1.88	
Snake River Plain	0.94	+0.21	3.08	-0.54	1.92	+1.10	
Salmon-Payette-Boise	2.29	+0.08	6.49	-2.95	2.53	+1.08	
Clearwater	2.31	-0.12	9.16	-1.72	3.35	+1.00	
Southeastern Oregon	0.98	+0.07	3.25	-1.24	2.05	+1.20	

^{1/} Preliminary analysis by U. S. Weather Bureau from data furnished by Meterological Service of Canada and U. S. Weather Bureau.

^{2/ 15-}year (1943-1957) division average.

^{3/} Departure from 15-year (1943-57) drainage division average.

WATER SUPPLY OUTLOOK and SNOW SURVEYS KOOTENAI, PEND OREILLE, SPOKANE, PALOUSE, CLEARWATER, SALMON WATERSHEDS **IDAHO**

MAY 1, 1963

GENERAL SUMMARY

The outlook for streamflow during the spring and summer season in this area is still far below normal, although slightly improved on some rivers. Precipitation and snowfall during April was near normal for most rivers, but generally above average on the Salmon River. Snow cover increased in relation to normal significantly at the higher elevations, but all of the low and middle elevation snow has melted. The snow line is high for this time of the year and south slopes are bare to the tops of the mountains. On the north slopes, however, at high elevations, snow-water is near normal. This area of snow cover makes up a very small precentage of the drainage basins.

Soil moisture conditions went up at the middle and lower elevations but has not yet changed at the high snow courses where the major melt has not started. The relatively dry soil conditions at high elevations are still expected to absorb an unusually high amount of snow-water.

Streamflow during the month was well below average in spite of the heavy precipitation and snowfall. This is explained by cool temperatures and dry soil conditions.

Rainfall that occurred during April did eliminate one irrigation. The major rivers in the area have near average supplies of water by using stored water. The smaller streams, without adequate storage facilities, are forecast to have below normal supplies for 1963.

WATER SUPPLY OUTLOOK expressed as "Poor", "Foir" "Average" or "Excellent"

and

STREAMFLOW FORECASTS (1,000 Ac. Ft.) a

OUTLOOK	FORECAST THIS YEAR	FORECAST PERIOD	1943-57 AVERAGE	THIS YEAR AS PERCENT OF AVERAGE
Good				68
				67
Good		May-Sept.	12144	77
	8378	May-July	10975	77
	6970	May-June	9027	77
Fair	550	May-July	729	75
Fair	1610	May-Sept.	2127	76
	650	May-Sept.	842	77
	610	May-July	783	78
	770	May-Sept.	1051	73
	725	May-July	983	74
Fair	5150	, ,	7157	72
	3050		4226	72
	2890		4011	72
	1800			72
		, ,		73
Fair			_	75
1011				76
		, ,		76
	Good Good Fair Fair	Good 5460 3600 Good 9280 8378 6970 Fair 550 Fair 1610 650 610 770 725 Fair 5150 3050 2890 1800 1690	Good 5460 May-Sept. 3600 May-June Good 9280 May-Sept. 8378 May-July 6970 May-June Fair 550 May-July Fair 1610 May-Sept. 650 May-Sept. 650 May-Sept. 610 May-Sept. 770 May-Sept. 725 May-July 770 May-Sept. 725 May-July 770 May-Sept. 3050 May-Sept. 2890 May-July 1800 May-Sept. 2890 May-July 1800 May-Sept. 1690 May-July 1800 May-Sept. 1690 May-July 1800 May-Sept. 1690 May-Sept. 660 May-Sept.	Good 5460 May-Sept. 7994 3600 May-June 5341 Good 9280 May-Sept. 12144 8378 May-July 10975 6970 May-July 729 Fair 550 May-Sept. 2127 650 May-Sept. 2127 650 May-Sept. 842 610 May-July 783 770 May-Sept. 1051 725 May-July 983 Fair 5150 May-Sept. 7157 3050 May-Sept. 4226 2890 May-July 4011 1800 May-Sept. 2505 1690 May-July 2312 Fair 4780 May-Sept. 6358 660 May-Sept. 6358

Report Prepared by _ M. W. NELSON AND J. ALDEN WILSON

U.S. DEPARTMENT OF AGRICULTURE --- SOIL CONSERVATION SERVICE P.O. BOX 1247, BOISE, IDAHO

HISTORICAL DATA (Kootenai River) Data obtained from U.S. Geological Survey records.

	SEASON	IAL VOLUMES of	LEONIA		RIVER FLOOD STAGES				
YEAR		MFLOW (1,000 A		LEC	AINC	BONNERS	FERRY		
	APR - SEPT.	APR JUNE	MAY - JUNE	GAGE HEIGHT	PEAK C.F.S.	MAX. DISCH. C.F.S.	GAGE HEIGHT		
1943 1944 1945	9,255 4,136 6,050	6,191 2,818 4,060	4,333 2,505 3,802	114.12 108.55 114.07	58,000 30,000 57,700	65,000 31,100 61,300	24.99 14.02 24.04		
1946 1947 1948 1949 1950	9,510 9,100 11,073 6,899 9,965	6,903 6,823 8,440 5,366 6,67?	5,834 5,629 7,508 4,316 5,890	116.65 117.31 123.15 116.68 118.21	80,500 88,200 139,000 81,700 90,100	77,000 82,500 123,000 75,200 87,100	30.41 31.31 35.32 30.84 33.98		
1951 1952 1953 1954 1955	10,807 8,454 8,402 12,213 8,444	7,101 6,096 5,600 7,583 5,377	6,001 4,659 5,024 6,878 4,996	117.04 114.87 116.51 120.81 117.30	76,300 63,000 74,700 104,000 79,300	. 83,800 69,700 . 76,700 .132,000 86,200	31.86 26.30 30.21 35.55 31.80		
1956 1957	11,494 7,798	8,755 6,074	7,308 5,468	121.65 115.93	115,000	,127,000 78,300	37.09 28.81		

SOIL MOISTURE		PROFILE	(Inches)	SOIL MOISTURE (Inches)			
STATION		DEPTH	* CAPACITY	DATE	THIS		2 YEARS
NAME	ELEVATION		OA! AOIT		YEAR		AGO
Brown Fohl Fourth of July Summit Lookout Midway	3100 3450 3100 5250 2200	36 48 48 48 48	6.7 13.3 11.6 11.0 6.1	5/1 5/1 4/29 4/29 5/1	4.6 8.2 8.0 6.3 4.0	4.2 8.0 3.7	
*Total soil moisture. Not comparab to last year's published data.	le						

COMPARISON of SNOW COVER

	LIK	_ THIS YEAR	RS SNOW
RIVER BASIN WATERSHED	NO. OF COURSES AVERAGED	WATER EX AS PERCE LAST YEAR	NT OF :

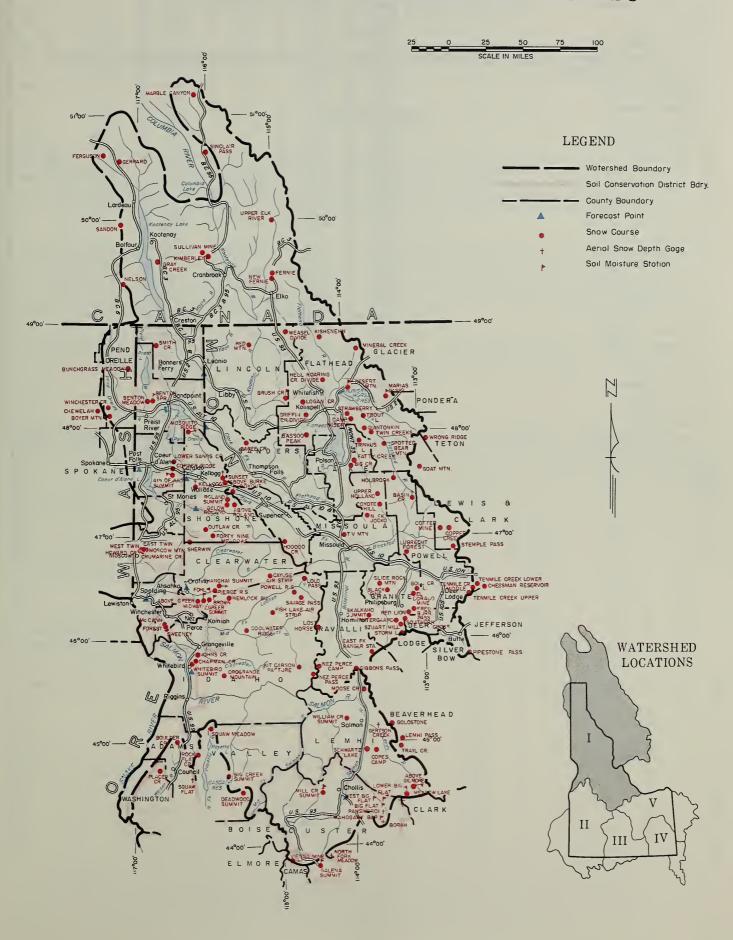
RESERVOIR STORAGE (1,000 Ac. Ft.)

ı	250501010	USABLE	MEASURED (First of Month)					
	RESERVOIR	CAPACITY	THIS YEAR	LAST YEAR	1943 - 57 AVERAGE			
-					**			
1	Hungry Horse	3428.0	2535.0	2321.0	2048.0			
ı	Flathead	1791.0	966.5	1119.0	936.0			
ı	Pend Oreille	1561.0	1043.0	935.4	836.8			
	Coeur d'Alene	238.5	181.8	370.8				
ı								

WONZ		CUR	RENT INFORMA	PAST RECORD		
SNOW COURSE		DATE OF	SNOW DEPTH	WATER	WATER CON	TENT (Inches)
NAME	ELEVATION	SURVEY	(Inches)	CONTENT (Inches)	LAST YEAR	1943-57 AVERAGE
Above Gilmore +	8200	4/29	35	12.0		
Above Greer	1240	4/30	0	0.0	0.0	
Benton Meadow	2344	4/29	0	0.0	0.0	0.0*
Benton Spring	4900	4/29	19	7.8	12.0	17.8
Big Creek Summit	6608	4/30	73	27.6	31.6	36.5*
Boulder Creek	5500	4/25	31	11.3	11.1	
Cayuse Airstrip	3700	4/30	0	0.0	0.0	1.4*
Chapman Creek	4220	4/30	0	0.0	0.0	0.2*
Coolwater Mountain	6200	4/30	56	25.0	17.8	
Copes Camp +	7500	4/29	24	8.2		
Copper Ridge	4800	4/29	24	9.0	23.5	27.8

^(*) Estimated 1943-57 average. (**) Average for period of record. (*) Affected by dike breakage down-stream. (*) Forecasts made by P. E. Farnes, SCS, Bozeman, Montana. (*) Aerial observation, water content estimated. (a) Assuming normal meteorological conditions. (b) Actual or estimated 1943-57 average. (c) Observed flow corrected for storage in Flathead Lake and Hungry Horse. (d) Observed flow corrected for storage in Priest Lake. (e) Observed flow corrected for storage in Coeur d'Alene Lake and diversions by Spokane Valley Farms Company and Rathdrum Prairie Canals.

KOOTENAI, PEND OREILLE, SPOKANE, PALOUSE, CLEARWATER, SALMON WATERSHEDS



WOW		CUR	CURRENT INFORMATION			PAST RECORD		
SNOW COURSE		DATE OF	SNOW DEPTH	WATER CONTENT	WATER CON	TENT (Inches		
NAME	ELEVATION	SURVEY	(Inches)	(Inches)	LAST YEAR	1943-57 AVERAG		
Crater Meadows	6100	4/28	82	36.7				
Crumarine Creek	3500	4/27	0	0.0		0.0*		
Deadwood Summit +	7000	5/5	101	38.2		49.7*		
East Twin	4000	4/27	0	0.0	0.0	0.0*		
Elk Butte	5550	4/28	48	19.5				
Fish Lake Airstrip	5000	4/30	70	32.5	35.0	46.1*		
Forty-nine Meadows	5000	4/28	41	17.0	24.4	34.2*		
Fourth of July Summit	3100	4/29	0	0.0	0.0	34.2		
Galena Summit	8795	4/30	65	23.6	19.5	24.5*		
	6000	4/28	83	36.4	19.5	24.5		
Granite Peak		4/20	0					
Greer Summit	3000			0.0	0.0			
Hemlock Butte	5500	4/30	87	38.5	49.2			
Howard Creek	3500	4/27	0	0.0	0.0	0.0*		
Johns Creek	3810	4/30	0	0.0	0.0	0.0*		
Lolo Pass	5230	4/29	45	19.6	33.7	29.7*		
Lookout	5250	4/29	62	25.2	30.8	34.0*		
Lost Lake	6000	4/28	101	44.2				
Lower Sands Creek	3400	4/30	6	2.2	14.1	12.6*		
Midway	2200	4/30	0	0.0	0.0			
Mill Creek Summit	8870	4/29	59	20.2				
Morgan Creek	7580	4/28	39	11.9				
Moscow Mountain	4800	4/27	13	4.9	5.9	12.7*		
Orogrande Mountain	7800	4/30	104	41.9	38.2			
Outlaw Creek	3750	4/30	Т	T	6.2			
Pahsimeroi +	7600	4/29	0	0.0				
Pierce Ranger Station	3171	4/30	0	0.0	0.0	1.8*		
Rock Flat Summit	5200	4/29	22	8.5	10.9			
Schwartz Lake +	8500	4/29	48	16.4				
Shanghai Summit	4600	4/30	23	9.5	21.0	24.0*		
Sherwin	3200	5/1	0	0.0	3.0	24.0"		
Smith Creek	4800	5/1	76		39.0	46.3*		
	1			30.7		_		
Squaw Meadow +	5800	4/30	63	23.8	32.6	38.2*		
Twin Peaks +	9190	4/29	68	23.3				
Vienna Mine +	8900	4/30	86	31.2	32.9	36.6*		
West Twin	4200	4/27	0	0.0	0.0	0.1*		
Whitebird Summit	4400	4/30	0	0.0	0.0			
Williams Creek Summit	7800	4/30	47	15.0				
						1		
					-			
						l.		

WATER SUPPLY OUTLOOK and SNOW SURVEYS BOISE, PAYETTE, WEISER, BRUNEAU, OWYHEE WATERSHEDS IDAHO

as of

MAY 1, 1963

GENERAL SUMMARY

The water supply outlook for this area has improved on all streams and rivers. Heavy snowfall and precipitation during April eliminated one irrigation and added snow-water at the high elevations throughout the mountains. The Boise, Payette and Owyhee Rivers, with good storage facilities, are assured of near normal supplies for 1963. The smaller streams and rivers without adequate storage facilities, however, are forecast to have water shortages for this season unless unusually heavy rains continue through May and June.

Soil moisture decreased slightly during the month of April in spite of the snow-melt and precipitation. This is due in part to an ice layer which has been reported under most of the snow courses. Apparently melting snow-water ran over the soil in many places without changing moisture conditions beneath the ice layer. The soils are expected to absorb a considerable portion of the snow pack still remaining at the high elevations, and thereby reduce streamflow below what is indicated by the snow courses measurements.

Stored water on the Boise and Payette Rivers is excellent. The Owyhee Reservoir is below normal but can deliver near normal water supplies for 1963. Water users in general should use water conservatively and carry-over as much as possible into the 1964 season.

WATER SUPPLY OUTLOOK expressed as "Poor", "Fair" and S

and STREAMFLOW FORECASTS (1,000 Ac. Ft.) a

STREAM and/or FORECAST POINT		OUTLOOK	FORECAST THIS YEAR	FORECAST PERIOD	1943-57 AVERAGE	THIS YEAR AS PERCENT OF AVERAGE
Boise River nr. Twin Springs nr. Boise c South Fork at Anderson Dam d Payette River nr. Horseshoe Bend North Fork at Cascade f nr. Banks South Fork nr. Banks g Weiser River above Crane Creek h Bruneau River nr. Hot Springs Lake Owyhee net Inflow i Snake River at Weiser	e	Good Good Good Fair	400 365 750 245 1060 340 430 410 555 230 75 40 38 3250	May-Sept. May-July May-Sept. May-Sept. May-Sept. May-Sept. May-Sept. May-July May-July May-Sept. May-Sept. May-Sept. May-Sept.	633 579 1309 511 1624 499 631 597 869 286 167** 214 196 5835	63 63 57 48 65 68 69 64 80 45 19 19

Report Prepared by

M. W. NELSON AND J. ALDEN WILSON

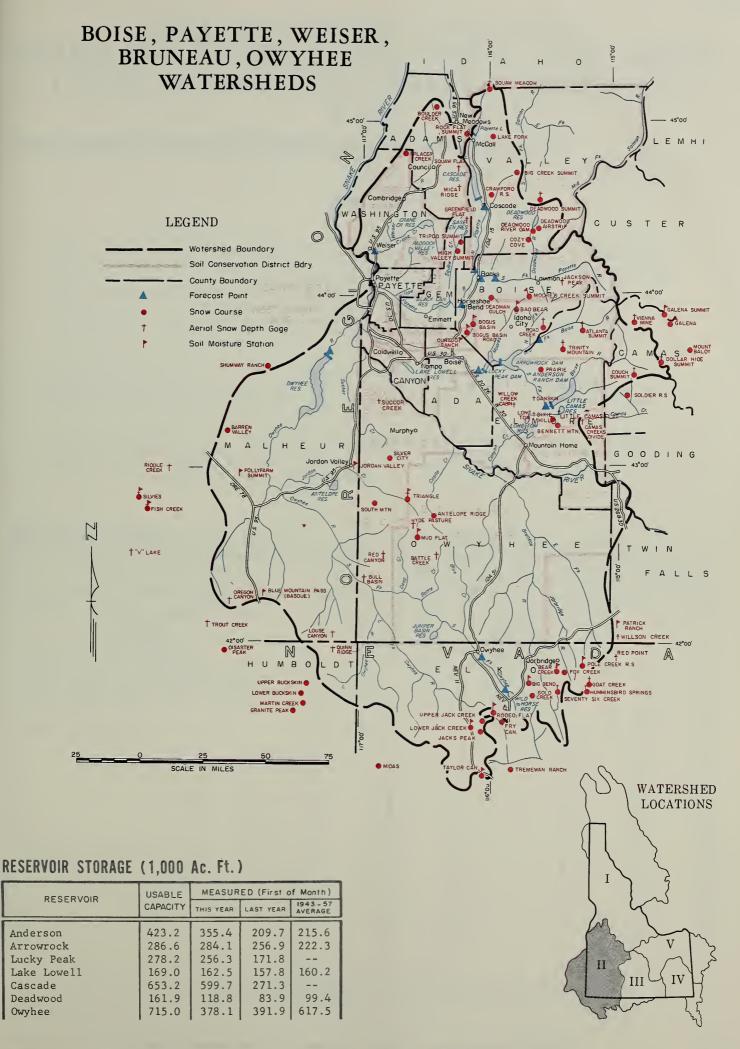
U.S. DEPARTMENT OF AGRICULTURE --- SOIL CONSERVATION SERVICE

P.O. BOX 1247. BOISE, IDAHO

SOIL MOISTURE		PROFILE	(Inches)	SOIL MOISTURE (Inches)			
STATION			* CAPACITY	DATE		LAST	
NAME	ELEVATION	DEFIN GAPAGIT	YEAR		YEAR		
Bad Bear Bogus Basin Road Moores Creek Summit	5500 4830 6100	60 48 60	6.3 7.1 8.8	4/30 5/1 4/30	4.4 5.6 6.1	 5.5 	5.3
*Total soil moisture. Not compara last year's published data.	ble to						

SNOW			CURRENT INFORMATION			PAST RECORD	
SNOW COUR	SE		DATE OF	SNOW DEPTH	WATER CONTENT	WATER CON	TENT (Inches)
NAME		ELEVATION	SURVEY	(Inches)	(Inches)	LAST YEAR	1943-57 AVERAGE
		7500	E //	00	20 /	20.2	26 04
Atlanta Summit +		7500	5/4	80	32.4	32.3	36.0*
Bad Bear	NT.	5500 7800	4/30 4/29	56	18.6	T 25.1	21.2*
Bear Creek +	Nev.			15	6.4	25.1	21.2*
Bennett Mountain	27	6650	4/30				1 64
Big Bend	Nev.	6700	4/30 4/30	T 73	T 27.6	0.0	1.6*
Big Creek Summit		6608	.,			31.6	
Bogus Basin		6120	5/1	33	13.7	18.7	23.8
Bogus Basin Road		5360	5/1	0	0.0	0.0	
Boulder Creek		5500	4/25	31	11.3	11.1	
Couch Summit +		7000	4/30	28	10.2	9.2	14.5*
Cozy Cove		5900	4/29	4	2.0	5.7	9.2*
Crawford Ranger Station		4800	4/30	0	0.0	0.0	0.0*
Deadman Gulch		5600	5/1	1	0.4		10.9*
Deadwood Airstrip		5440	4/29	0	0.0	1.7	10.14
Deadwood Dam		5290	4/29	3	1.5	10.0	13.1*
Deadwood Summit +		7000	5/5	101	38.2		49.7*
Dixie Hill		5230	4/30	0	0.0		
Dollarhide Summit +		8700	4/30	68	27.5	17.6	27.8*
Fry Canyon	Nev.	6700	4/30	T	T	0.0	1.3*
Galena		7500	4/30	39	14.2	7.8	14.0*
Galena Summit		8795	4/30	65	23.6	19.5	24.5*
Goat Creek	Nev.	8800	4/29	56	18.9	21.2	19.9*
Gold Creek	Nev.	6600	4/30	0	0.0	0.0	0.0*
Greenfield Flat +		7370	4/30	85	32.1		
Hummingbird Springs +	Nev.	8945	4/29	68	22.6	31.3	25.2*
Jacks Peak	Nev.	8420	4/29	81	24.0	35.1	26.8*
Lower Jack Creek		6800	4/29	9	2.2	0.0	0.0*
Mica Ridge +		6800	4/30	61	23.1		
Moores Creek Summit		6100	4/30	40	16.2	24.2	29.9
Mount Baldy		9000	5/1	51	17.0	19.1	21.1*
Pole Creek Ranger Station	Nev.	8330	4/29	60	20.0	23.9	22.9*
Red Point +	Nev.	7940	4/29	26	8.7	8.7	
Rock Flat Summit		5200	4/29	22	8.5	10.9	1 74
Rodeo Flat	Nev.	6800	4/30	T	T	0.0	1.7*
Soldier Ranger Station		6100	4/30	0	0.0		2 54
South Mountain		6340	4/30	1	0.4		3.5*
Squaw Flat +		6230	4/30	36	13.6	22.6	38.2*
Squaw Meadow +	N	5800	4/30	63	23.8	32.6	
Taylor Canyon	Nev.	6200	4/29	6	1.0	0.0	0.0*
Trinity Mountain +	NY	7400	4/30	92	37.3	41.2	43.3*
Upper Jack Creek	Nev.	7250	4/29	18	5.3	0.0	36.6*
Vienna Mine +		8900	4/30	86	31.2	32.9	30.0%
1							1

^{*}Estimated 1943-57 average. (o) Forecast made by W. T. Frost, S.C.S., Portland, Oregon. (+) Aerial observation, water content estimated. (a) Assuming normal meteorological conditions. (b) Actual or estimated 1943-57 average. (c) Observed flow corrected for storage in Arrowrock, Anderson Ranch and Lucky Peak. (d) Observed flow corrected for change of storage in Anderson Ranch Reservoir. (e) Observed flow corrected for change of storage in Cascade & Deadwood Reservoirs. (f) Observed flow corrected for change of storage in Deadwood Reservoir. (h) Observed flow of Weiser River nr. Weiser minus the observed flow of Crane Creek at mouth. (i) From U.S.B.R. records of inflow. (**) 1944-1957 average.



WATER SUPPLY OUTLOOK and SNOW SURVEYS

SNAKE, BIG WOOD, LITTLE WOOD, RAFT, GOOSE CREEK, SALMON FALLS CREEK WATERSHEDS

IDAHO

as of

MAY 1, 1963

GENERAL SUMMARY

The streamflow outlook for all rivers in this area improved significantly during April although there are still several streams forecast to have critically low water supplies. Reservoir-stored water on the Snake and other large rivers is excellent and can make up for expected streamflow deficiency. The smaller rivers and streams, without good storage facilities or carry-over water, face shortages for the 1963 season unless good rains occur in May and June. The snow pack increased in relation to normal at the higher elevation snow courses but disappeared almost entirely from the middle and low elevation courses. The heavy precipitation and snowfall did not produce good streamflow for the month. This can be explained in part by the dry soil and cool temperatures which prevailed.

Soil moisture at the low and middle elevations increased during April although the soil is still well below water-holding capacity. At the high soil moisture sites very little change took place in April because the snow did not melt. The relatively dry soil at higher elevations is expected to absorb an unusually high amount of water during the major snow-melt.

Reservoir-stored water on the major rivers with good storage facilities can insure near normal deliveries for 1963. However, several of the smaller rivers, with inadequate or no storage, face severe water shortages for 1963. Water in general should be used conservatively to produce the most from available supplies and increase carry-over for 1964.

WATER SUPPLY OUTLOOK expressed as "Poor", "Fair" "Average" or "Excellent"

and STREAMFLOW FORECASTS (1,000 Ac. Ft.) a

STREAM and/or FORECAST POINT	OUTLOOK	FORECAST THIS YEAR	FORECAST PERIOD	1943-57 AVERAGE	THIS YEAR AS PERCENT OF AVERAGE
Snake River at Moran (Natural Flow) O		556	May-Sept.	881	63
nr. Heise c	Good	2550	May-Sept.	3718	69
nr. Blackfoot d		2600	May-July	3735	70
Big Wood River at Hailey e	Fair	180	May-Sept.	249	72
(Corrected for Diversions)		225	May-Sept.	302	75
Little Wood River above High Five Creek	Fair	45	May-Sept.	62	73
Goose-Trapper Creeks inflow to Oakley Res.	Poor	5.5	May-Sept.	20	28
Salmon Falls Creek nr. San Jacinto	Poor	18	May-Sept.	55	33
		17	May-July	53	32
Cedar Creek Inflow	Poor	2.0	May-Sept.		

Report Prepared by

M. W. NELSON AND J. ALDEN WILSON

U.S. DEPARTMENT OF AGRICULTURE --- SOIL CONSERVATION SERVICE

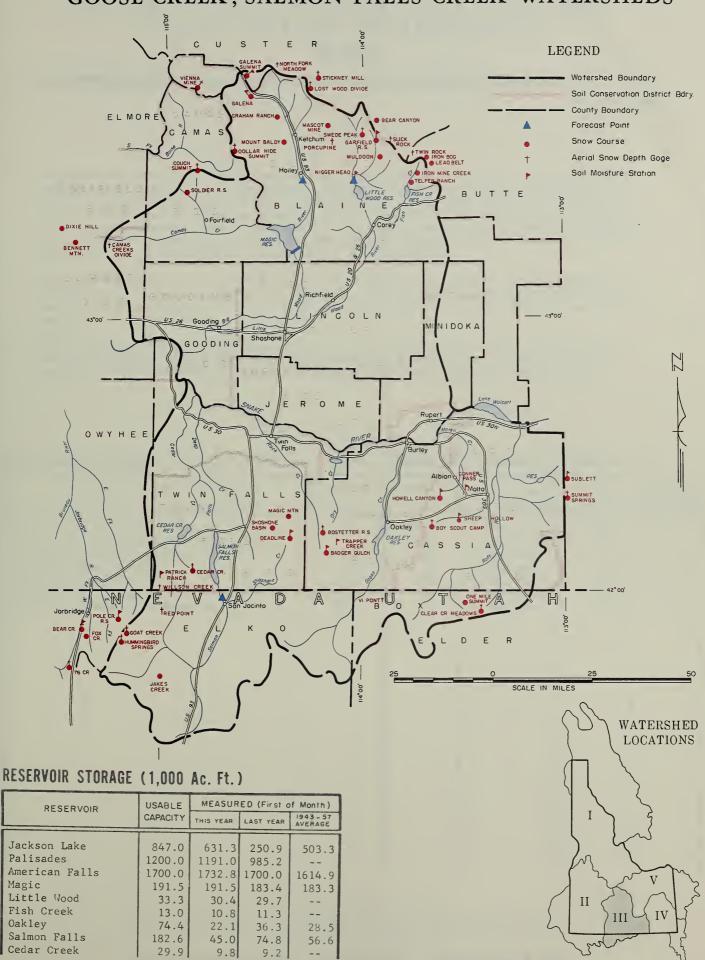
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SOIL MOISTURE	PROFILE (Inches) SOIL						OIL MOISTURE (Inches)		
STATION NAME ELEVATION		DEPTH	* CAPACITY	DATE	THIS YEAR	LAST YEAR	2 YEARS AGO		
Badger Gulch Conner Pass Galena Galena Summit Garfield Ranger Station Howell Canyon Niggerhead Trapper Creek	6660 5700 7300 8795 6554 8000 5450 5300	36 36 48 48 36 46 36 36	7.0 9.8 8.3 5.8 5.2 11.5 10.1	4/29 4/29 4/30 4/30 4/25 4/29 4/26 4/29	4.5 8.9 5.6 1.8 5.2 3.7 9.8 5.4	7.4 5.0 5.2 9.6 6.4	5.6		
*Total soil moisture. Not comparab to last year's published data.	le								

WOW -			CURI	RENT INFORMA	TION	PAST RECORD		
SNOW COL	IRSE		DATE OF	SNOW DEPTH	WATER CONTENT	WATER CONT	1	
NAME		ELEVATION	SURVEY	(Inches)	(Inches)	LAST YEAR	1943-57 AVERA	
Badger Gulch		6660	4/29	4	2.2	2.4		
Bear Creek +	Nev.	7800	4/29	56	18.6	25.1	21.2*	
Bennett Mountain		6650	4/30	15	6.4			
Bostetter Rgr. Sta. +		7500	4/30	11	3.5			
Boy Scout Camp +		7600	4/30	32	10.7			
Cedar Creek +		7000	4/29	8	2.5	T	2.9	
Clear Creek Meadows +	Utah	9050	4/30	69	23.0			
Couch Summit +		7000	4/30	28	10.2	9.2	14.5	
Deadline		6900	4/27	40	12.4	11.4	20.8	
Dollarhide Summit +		8700	4/30	68	27.5	17.6	27.8	
Galena		7500	4/30	39	14.2	7.8	14.0	
Galena Summit		8795	4/30	65	23.6	19.5	24.5	
Garfield Ranger Station		6554	4/25	13	5.4	0.0	1.0	
Goat Creek	Nev.	8800	4/29	56	18.9	21.2	19.9	
Howell Canyon		8000	4/29	45	20.6	15.3		
Hummingbird Springs +	Nev.	8945	4/29	68	22.6	31.3	25.2	
Iron Mine Creek	21.0 4 4	6370	4/24	15	5.2	Т		
Magic Mountain		6700	4/27	31	9.9	10.6	16.4	
Mount Baldy		9000	5/1	51	17.0	19.1	21.1	
Muldoon		6300	4/26	2	0.8	0.0	0.0	
Pole Creek Ranger Station	Nev.	8330	4/29	60	20.0	23.9	22.9	
Porcupine +	MEV.	8350	4/30	45	16.3	13.4		
Red Point +	Nev.	7940	4/29	26	8.7	8.7		
	Nev.	5740	4/30	0	0.0		0.0	
Shoshone Basin		6100	4/30	0	0.0			
Soldier Ranger Station		8500	4/30	0	0.0			
Summit Springs +		7500	4/30	45	14.5	11.0		
Swede Peak		6000	4/24	т Т	T T	0.0		
Telfer Ranch				86	31.2	32.9	36.6	
Vienna Mine +		8900	4/30		7.0	32.9	30.0	
Vi Pont +	Utah	7650	4/30	21	7.0			
Wilson Creek +		7500	4/29	22	/.3			
							1	

^{*}Literated 1943-57 average. (+) Aerial observation, water content estimated. (a) Assuming normal meteorological conditions. (b) Actual or estimated 1943-57 average. (c) Observed flow corrected for storage in Ix k on Lake and Palisades Reservoir. (d) Observed flow corrected for storage in Jackson Lake, Palisades, I land Park, Grassy Lake, Henry's Lake and diversions between Heise and Blackfoot. (e) Combined discharge of Big Wood River and Big Wood Slough. (**) 1949-1940 average.

SNAKE RIVER, BIG WOOD, LITTLE WOOD, RAFT, GOOSE CREEK, SALMON FALLS CREEK WATERSHEDS



WATER SUPPLY OUTLOOK and SNOW SURVEYS UPPER SNAKE, BLACKFOOT, PORTNEUF, BEAR, MALAD WATERSHEDS

IDAHO

as of MAY 1, 1963

GENERAL SUMMARY

The water supply outlook in this area improved significantly during April as a result of unusually heavy snowfall and precipitation. Forecasts of reservoir inflow continue well below normal, however, stored water is now approaching average. At high elevation snow courses, snow cover increased in relation to normal. April snowfall on some courses was greater than any month this season. This is most unusual. In spite of melting snow cover at low elevations and heavy precipitation, streamflow was far below normal in April. This was probably due to the cool temperatures and generally dry soil conditions.

Soil moisture increased at the middle and lower elevations as a result of the rainfall and melting snow. At the high elevations, where the snow pack has not yet started to melt, soils are still dry and expected to absorb considerable water when the high elevation snow-melt begins.

Reservoir-stored water is excellent on the Snake and Blackfoot Rivers and can be used to overcome deficiencies in streamflow. The smaller rivers and streams in the area have an improved water supply outlook, but are forecast to have water shortages later in 1963.

WATER SUPPLY OUTLOOK expressed as "Poor", "Foir" "Average" or "Excellent"

and STREAMFLOW FORECASTS (1,000 Ac. Ft.) a

AVERAGE" or "Excellent"	ana	01112711111 40	II TOREDADIO (.,	/
STREAM and/or FORECAST POINT	OUTLOOK	FORECAST THIS YEAR	FORECAST PERIOD	1943-57 AVERAGE	THIS YEAR AS PERCENT OF AVERAGE
Snake River nr. Heise c nr. Blackfoot d Blackfoot Reservoir Inflow Portneuf River at Topaz Bear River at Harer	Good Fair Fair Fair	2550 2600 40 25 142	May-Sept. May-July May-Sept. May-Sept. May-Sept.	3718 3735 235 47	69 70 60
Cub River nr. Preston Montpelier Creek nr. Montpelier	Fair Fair	29 7	May-Sept. May-Sept.	10.5	62 67

Report Prepared by

M. W. NELSON AND J. ALDEN WILSON

U.S. DEPARTMENT OF AGRICULTURE --- SOIL CONSERVATION SERVICE

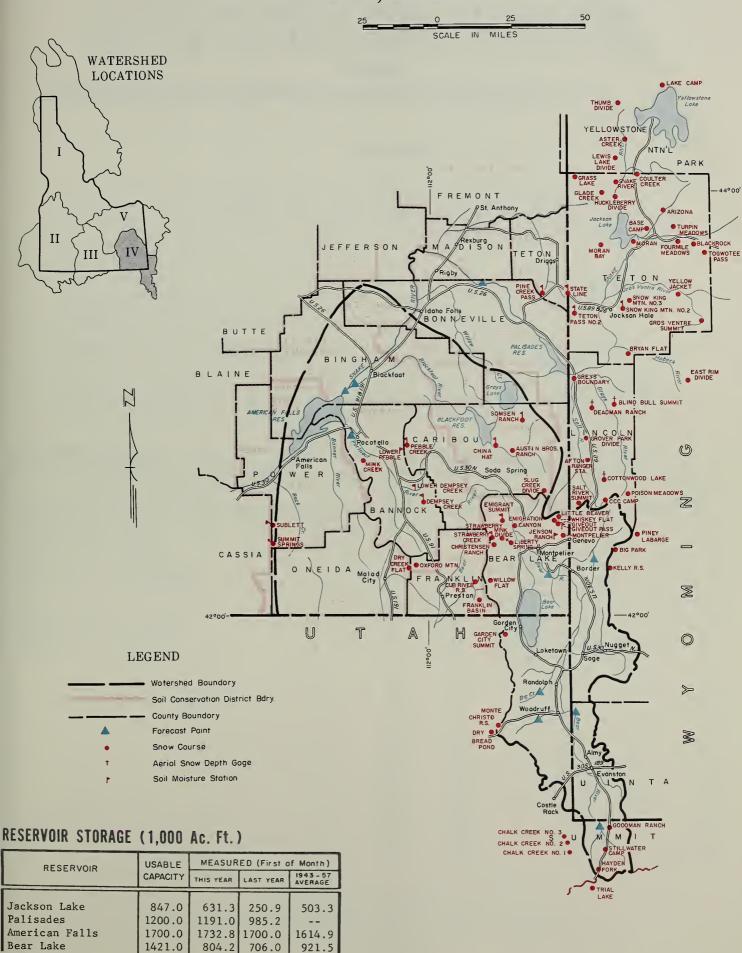
P.O. BOX 1247, BOISE, IDAHO

COIL MOISTURE		PROFILE	(Inches)		SOIL MOISTU	RE (Inches)	
STATION	ELEVATION	DEPTH	ĈAPACITY	DATE	THIS YEAR	LAST YEAR	2 YEARS AGO
Emigrant Summit Giveout Pass Jenson Ranch Lower Pebble Pebble Creek Strawberry Creek *Total soil moisture. Not comp to last year's published data.	1	36 50 4 5 36 48 48	8.2 12.6 18.7 7.6 7.2 12.7	4/26 4/29 4/29 4/29 4/29 4/26	3.4 8.3 18.3 6.1 4.7 10.4	4.2 6.9 5.0 7.1	

SHOW		CURI	CURRENT INFORMATION			PAST RECORD		
SNOW COURSE	ELEVATION	DATE OF SURVEY	SNOW DEPTH (Inches)	WATER CONTENT (Inches)	WATER CON	TENT (Inches)		
Christensen Ranch Cub River Ranger Station Dry Basin + Dry Creek Flat Emigrant Summit Franklin Basin Giveout Horseshoe Basin + Liberty Spring Little Beaver Montpelier Creek Oxford Mountain Pebble Creek Slug Creek Divide Strawberry Creek Strawberry-Mink Divide Summit Springs Whiskey Flat Willow Flat	5600 5400 7900 6350 7700 8200 6850 8000 6600 6600 6800 6550 7225 5800 6800 8500 6900 6100	4/29 4/29 5/3 5/1 4/26 4/25 4/29 5/3 4/30 4/29 4/29 4/29 4/29 4/29 4/29 4/29 4/29	0 0 68 0 56 73 16 68 94 27 0 3 12 38 0 28 0 6 T	0.0 0.0 28.2 0.0 20.2 28.1 6.4 28.2 39.0 11.8 0.0 5.2 16.1 0.0 12.3 0.0 2.5 T	0.0 0.0 17.9 23.2 39.2 0.0 8.2 0.0	0.0* 0.0* 0.0* 28.0* 1.7* 15.0* 3.0*		

^{*}Estimated 1943-57 average. (o) Forecast made by Gregory L. Pearson, SCS., Salt Lake City, Utah. (+) Aerial observation, water content estimated. (a) Assuming normal meteorological conditions. (b) Actual or estimated 1943-57 average. (c) Observed flow corrected for storage in Jackson Lake and Palisades Reservoir. (d) Observed flow corrected for storage in Jackson Lake, Palisades, Island Park, Grassy Lake, Henry's Lake and diversions between Heise and Blackfoot.

UPPER SNAKE, BLACKFOOT, PORTNEUF, BEAR, MALAD WATERSHEDS



WATER SUPPLY OUTLOOK and SNOW SURVEYS UPPER SNAKE, HENRY'S FORK, TETON, CAMAS-BEAVER CREEK, LITTLE LOST, BIG LOST, UPPER SALMON WATERSHEDS

as ot MAY 1, 1963

GENERAL SUMMARY

The outlook for streamflow improved considerably during the month of April as a result of heavy snowfall and good precipitation. While inflow forecasts were raised, they are still from 18% to 39% below normal. Snow cover at the high elevations increased in relation to normal during April. This is an unusual condition. Some snow courses had more snowfall this month than any other month this season. The major snow-melt has not started at the higher elevations although middle and low elevation snow has melted.

Soil moisture at the low and middle elevations increased during April although the soil is still well below water-holding capacity. At the high soil moisture sites very little change took place in April because the snow did not melt. The relatively dry soil conditions are expected to absorb an unusually high amount of water during the major snow-melt.

Snowfall at the low and middle elevations during April melted but produced very little streamflow. This can be explained by the dry soil and the cool temperatures which prevailed.

Reservoir-stored water on the main stem of the Snake is excellent and can be used to make up for deficiencies in streamflow. On the smaller rivers without adequate storage facilities, the water supply outlook is improved but shortages are forecast for late in the season.

WATER SUPPLY OUTLOOK expressed os "Poor", "Fair"
"Average" or "Excellent"

STREAMFLOW FORECASTS (1,000 Ac. Ft.) a and

STREAM and/or FORECAST POINT	OUTLOOK	FORECAST THIS YEAR	FORECAST PERIOD	1943-57 AVERAGE	THIS YEAR AS PERCENT OF AVERAGE
Snake at Moran (Natural Flow) O Snake River nr. Heise c Henry's Fork nr. Ashton d nr. Rexburg e Teton River nr. St. Anthony Big Lost River at Howell Ranch Big Lost River nr. Mackay f Little Lost River nr. Howe Salmon River nr. Challis	Good Good Fair Fair Fair Poor Fair		May-Sept. May-Sept. May-Sept. May-Sept. May-Sept. May-Sept. May-Sept. May-Sept. May-June May-Sept. May-Sept. May-Sept. May-Sept. May-Sept. May-Sept. May-Sept.		AS PERCENT

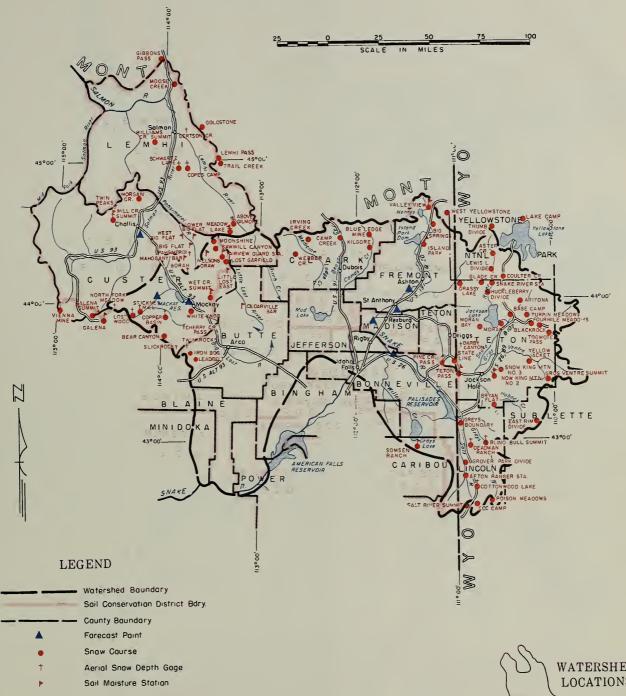
Report Prepared by _ M. W. NELSON AND J. ALOEN WILSON U.S. DEPARTMENT OF AGRICULTURE --- SOIL CONSERVATION SERVICE P.O. BOX 1247. BOISE, IOAHO

L MOISTURE		PROFILE	(Inches)		SOIL MOISTU	RE (Inches)	
STATION		DEPTH	* CAPACITY	DATE	THIS	LAST	2 YEAR
NAME	ELEVATION				YEAR	YEAR	AGO
Bell Mountain Bar	6640	18	3.6	4/25	1.2	1.3	
Big Flat	7050	18	3.6	4/25	1.2	1.2	
Cedarville Bar	5400	18	3.0	4/25	0.9	1.1	
Fairview Guard Station	5850	42	7.6	4/25	7.3	7.3	
Island Park	6315	42	9.9	4/29	6.7		
Mill Creek Summit	8870	48	8.4	4/29	2.7		
Nielson's Draw	6400	18	3.3	4/25	1.1	1.1	
Pine Creek Pass	6750	48	13.3	4/26	5.6		
State Line	6400	48	14.8	4/26	6.0		
Teton Pass	8500	48	10.5	4/26	6.5		
Valley View	6500	48	13.3	4/29	4.1		
West Big Flat	6550	18	3.2	4/25	1.1	1.0	
Vet Creek Summit	8175	48	17.1	4/30	7.7		
Total soil moisture. Not compar	able						
to last year's published data.							
•							

SNOW			CUR	RENT INFORMA	TION	PAST F	RECORD
SNO	W COURSE		DATE OF	SNOW DEPTH	WATER CONTENT	WATER CONTENT (Inches)	
NAME		ELEVATION	SURVEY	(Inches)	(Inches)	LAST YEAR	1943-57 AVERAGE
Above Gilmore + Big Springs Copes Camp + Darby Canyon + Galena Galena Summit Island Park Mill Creek Summit Morgan Creek Pahsimeroi + Pine Creek Pass Schwartz Lake + State Line Teton Pass Twin Peaks + Valley View Vienna Mine + West Yellowstone Wet Creek Summit Williams Creek Summit	Wyo. Mont.	8200 6500 7500 8250 7500 8795 6315 8870 7580 7600 6750 8500 6400 8500 9190 6500 8900 6700 7800 7800	4/29 4/29 4/29 4/26 4/30 4/30 4/29 4/29 4/28 4/29 4/26 4/29 4/26 4/29 4/30 4/30 4/30	35 29 24 60 39 65 23 59 39 0 32 48 22 88 68 34 86 12 18 47	12.0 10.5 8.2 20.3 14.2 23.6 8.1 20.2 11.9 0.0 12.8 16.4 9.2 29.8 23.3 11.3 31.2 4.6 4.8 15.0	 14.5 7.8 19.5 5.0 0.0 38.5 32.9 5.0 	 14.0* 24.5* 8.6* 41.8* 36.6* 5.6

^{*}Estimated 1943-57 average. (+) Aerial observation, water content estimated. (a) Assuming normal meteorological conditions. (b) Actual or estimated 1943-57 average. (c) Observed flow corrected for storage in Jackson Lake and Palisades Reservoir. (d) Observed flow corrected for storage in Island Park Reservoir and Henry's Lake. (e) Observed flow corrected for storage in Island Park Reservoir, Henry's Lake, Grassy Lake, and diversions between Ashton and Rexburg. (f) Observed flow corrected for storage in Mackay Reservoir and diversion in Sharp Ditch. (**) 1949-1960 average.

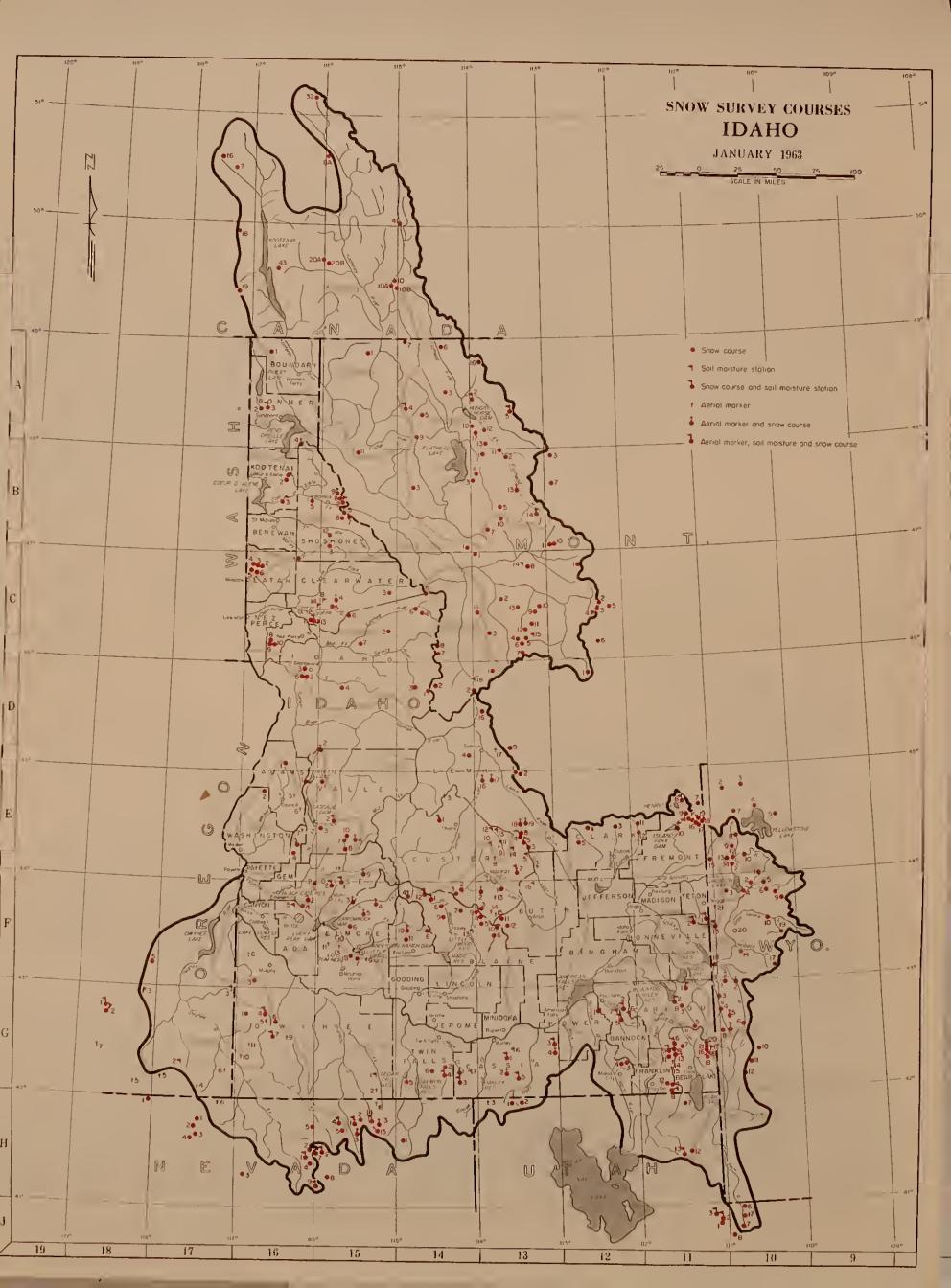
UPPER SNAKE, HENRY'S FORK, TETON, CAMAS - BEAVER CREEK, LITTLE LOST, BIG LOST, UPPER SALMON WATERSHEDS



RESERVOIR STORAGE (1,000 Ac. Ft.)

RESERVOIR	USABLE	MEASUR	ED (First o	f Month)
RESERVOIR	CAPACITY	THIS YEAR LAST YEAR A		1943 - 57 AVERAGE
Jackson Lake	847.0	631.3	250.9	503.3
Palisades	1200.0	1191.0	985.2	
American Falls	1700.0	1732.8	1700.0	1614.9
Island Park	127.0	133.4	127.4	127.4
Grassy Lake	15.2	12.5	10.0	13.4
Mackay	44.2	37.8	29.4	36.0





Index to IDAHO SNOW COURSES

		Ilide	A to IDILL		esc, two, est, 'sev.	NO. STATE NAME	sec. tae, egg. cuty,
NO. STATE NAME	SEC. TWO, OGE, ELEV.	NO. STATE MAME	sec. Tep, eot, tity,) NO, BIATE NAME	L41. 440 £040.		EAT. 440 E046.
KOOTENAI RIVER	26 26N 31N 5500	10E3 WY Canyon	Lat. and Lone.	BIG LOST RIVER	26 5N 21F 8600 7 5N 23E 8700	SALMON RIVER 13E10A I Above Gilmore 13ELim T Big Flet	13 134 26E 8200 25 11H 23E 7955 21 10H 23E 8251
15511 M Saroe Creek 121.M M Brush Creek 16 BC Fergusca	20e70, 114e56, 5600 13 20H 59R 2000	1007 WY CCC Camp 1005A WY Cottonwood Lake	9 29N 118W 7500 25 31N 118W 7500	13F13a I Cherry Cresk Page 13F2A I Copper Beein 13F11 I Iron Bog	24 6N 21Z 8000 23 4N 22E 7650	1)DBe 1 Borah 16D2 I Chapman Creek 18774 f Copes Camp	16 29H 2E 1215
30 BC Fermie 7 BC Gerrard	20,33, 11,612, 9000	10E10 WY Coulter Creek 10ClA WY Deadman Ranch	26 34N 116W 6534 32 37N 111W 7950	13F12 1 Leadbelt 14F3A 1 Lost Wood Divide	34 4N 23E 6800 19 6N 19E 8750	13D17e 1 Gertson Creek	22 22H 23E 8950 11 83 16V \$100
LF PC Gray Oreck 203 BC Kimberley	\$1915, 176,59, 2000 73,71, 176,59, 3000 74,51, 2100	10F17 WY East Rim Divide 10F6 WY Four Mile Meadows 10F13 WY Glade Creek	32 37N 11W 7950 35 45N 11RW 7770 12 48N 116W 7200	14F154 I North Fork Headow 13F144 I Silckrock	20 7N 18E 8150 17 AN 22E 8640 8 19E 7500	13D9 H Gold Steek 16D3 1 Johns Greek 13E1 H Lenhi Fene	9 298 28 3805 9 108 151 7480
32 BC Markle Canyon 108 BC Marrissey Ridge 19 BC Melson	78-52, 112-817, 3020 78-52, 112-87, 9100	10F18 WY Greys Boundary 10F19 WY Gres Ventre Summit	33 37N 118V 5800 36 40H 111W 8750	1AFRA 1 Stickney Hill 13F15m I Twin Rock*	9 6N 19E 7500 22 4N 22E 8100 25 7N 23E 7700	1)El3m 1 Lower Big Flat 13ElDo 1 Habogany Bar	10 10W 23E 7900
30A BC New Farmie 15Al N Red Mountain	7 36X 55M 6000	1063 WY Grover Park Divide 10E14 Wy Huckleberry Divide	77 33N 118W 7500 32 48N 115W 7300 44°34' 110°24' 7850	1)F1 1 White Knob BIG WOOD RIVER	4/20	13E18A 1 Meadow Lake 1AE1MA 1 Hill Creek Summit	24 13M 26E 9100 8 13M 17E 8875 22 & 26 27M 21E 6500
18 90 Sandon 8& 80 Sinclair Pass	50°10' 115°58' 4500 50°50' 115°58' 4500 29°59' 11°011' 3500	10E4 WT Lake Camp 10E9 WY Levis Lake Divide 10F4 WY Noran	24°32' 110°24' 7850 44°13' 110°40' 7903 8&17 45N 114W 6800	14F6A 1 Dollar Hide Summit	16 JN 15E 8620 3 6N 15E 7390 11 7N 15E 8795	13F7e I PahsimeroI	7 10# 24g 7600 34 18# 22E 8500
16Al I Smith Creek 20A 90 Sullivan Mine 11 90 Upper Sik River	79°73' 116°51' 5100	10F4 WY Moran 10F3 WY Moran Bay 10E2 WY Morrie Rasin	14 45N 116W 6800 44°44' 110°42' 7500	14F12H I Gelena Summit 14F5 I Grahum Runch	10 5N 17E 6200 0 4N 20E 7900	13E64 I Schwerts Laxa 13E2 M Trail Crest 14E9a : Twin Peaka	15 108 159 7099 28 15W 17E 9099
LA M Wearel Divide	8 3°N 24N 5450	1006 WY Polson Meadovs 1008 WY Salt River Summit	29 30N 116V 8500 32 29N 118W 7900	14F7 f Mascot Mine 14F9 I Mount Baldy 14F11 I SoldIar Ranger Station	26 4N 17E 9000 19 2N 14E 6100	12F4A I Vienna Hine 13E12m I West Big Flat	32 6W 14E 8900 35 12W 23E 6550
PRIEST RIVER 1642 I Benton Mosday	27 55N 4W 2344	10ELC WY Snaka River Station 10F20 WY Snov King Mountain #3 10ES WY Sylvan Pass	9 48N 115M 6780 4 40N 117W 7600 12 52N 110W 7100	LITTLE WOOD RIVER	11 1# 21E 6554	1605 I Whitabled Start 1404 I Williams Creek Start?	17 29H 2E 4390 34 21H 20E 7800
16434 I Beston Spring PEND OREILLE - CLAI	30 58W 3W 4900	10ET WY Thumb Divide 10F9 WY Togvotee Pass	29 44% 110% 9500	13F5R I Garfield Ranger Station 13F10 1 Iron Mine Greek 13F5 I Muldoon	11 3# 21E 6554 32 3N 23E 6370 25 3N 21E 6390	CLEARWATER RIVER	14 35W 2E 1243
13013 M Black Pine 1205 M Chessman Reservoir	23 5N 15N 7100 2 9N 5N 6200	10F5 WY Turpin Meadows 10F10 WY Tellowjacket	14 45W 112W 6930 33 42W 112W 7675	1471)m I Niggerheed 14714m I Porcupine	26 2W 20E 5450 30 4W 20E 8350	16014e I Brown 1603 I Capuse Airstrip	11 35W 3E 3100 4 36W 11E 3700
12B10 M Copper Greek 12B11 M Cotter Mine	1 15N 9V 5700 2 15% 9V 6250	HENRYS FORK RIVER 1159 : Big Springs	34 14M 44E 6500	13F9A I Svede Peak 13F6 1 Telfer Ranch	4 3W 21E 7500 12 2W 22E 6000	1907 I Coolveter Mountain 1902 I Fish Lass Airstrip 1909s I Fohl	32 33% 8E 6200 35 35% 11E 5000 16 368 5E 3150
1329 M Coyote Rili 1309 M El Dorado Mine 13011 M Pred Burr Pass	12 18% 16W 4200 23 8% 12W 7800 12 6% 13W 8000	11F16 I Black Canyon 11F19 I Black Moose	11 13N 45E 7850 33 14R 45E 8125	BOISE RIVER 15F4A 1 Atlanta Sumit	29 5H 10E 7500	1980 1 Fohl 1609 1 Forwar 1583 1 Forty-nine Mealcra	10 968 5E 3150 1 328 30 4550 6 438 5E 5000
13015m M Georgetown Lake 13010 M Gold Greek Lake	6 5W 13W 6450	10E15 WY Grassy Lake 11E10 1 Island Park 11E16 I Lather Springs	6 48% 1179 7230 29 13% 43E 6315 9 13% 45E 7650	15F7H T Bad Bear 15F7 T Bennett Mountain	35 78 68 5500 n 23 92 6650 n2 58 32 5360	16013 1 Green Stampif 1806 1 Hemlore Butte	13 358 22 3000 12 368 6E 5500
1901 M Roadoo Creek 1904 M Intergrand 1908 M Lubrecht Forest	9 1/8 27W 6200 6 5W 13W 6450 11 13W 14W 4040	11514 I Lucky Bog	2 13N 45Z 6900 12 13N 44B 7250	1674 I Bogus Basin Road 1675s I Bogus Basin Road 1579s I Camas Greeks Divide	32 58 3E 5360 36 58 2E 4830 11 25 9E 5720	1403 I Kit Carson Pasture 1405 M LoI: Pass	4 27% 16E 1700 11 10% 24% 5230 25 33% 34 230
1308 M Lubrecht Forest 13014% M Lubrecht Forest 1381 M North Fork Jocko	11 138 159 1100 3 175 179 6330	llE17 : Poscher's Cabin llDS : Valley Viov	11 13N 45E 8000 7 15N 44E 6500	147104 I Couch Sugmit	9 2W 14E 6959 17 1N 7E 5650	1608 I McCann 16012M I Midwey 14D1 M Namperce Pasa	27 33N N 4300 14 35H 2E 2200 25 15 24V 6575
12D1 M Pipestone Pass 13C12 M Bed Lion	10 1N TH T200 27 6N 134 7100	11E7 M West Yellowstone TETON RIVER	34 138 5E 6700	16F1 I Deadman Oulch 15FE I Dixie Eill	24 7N 3E 6500 13 2S 8E 5230 7 8N 9E 7000	1504 I Orogrande Hountain 1505 I Pierce Ranger Station	24 27N 6E 7800 2 36N 1E 3171
1302 M Shide Rock Mountain 1305 M Southern Cross 1201 M Stemple Pass	35 10N 16V 7100 9 5% 13W 6500 16 13W 7W 6900	10F21s WT Darby Canyon 11F2M T Pine Oresk Pass	28 43N 118W 8250 24 3N 44E 6750	15E9A 1 Jackson Peak 15F12a 1 Little Comman Flet	7 8N 9E 7000 21 18 9E 4950 19 15 8E 4550	1206 1 Powell Ranger Station 1201 1 Savage Page	33 37 14E 4230 16 3c4 15E 6600 7 37 6E 4500
1300 M Storm Lake 1306 M Stoart Mili	19 1N 13W 7780 19 5N 13W 6500	10f13M WT Toton Fass	32 38 46E 6400 24 41E 118V 8500	15713a 1 Long for 1571M 1 Mcorea Creek Summit 1576 1 Prairie	19 7N 7E 6100 1) 2N 7E 5600	1504 I Shangkai Sumit 1601/ I Sweeney	7 378 68 4500 1 328 34 4435
1272 M Termile Greek, Lover 1203 M Termile Greek, Middle 1201 M Termile Greek, Upper	13 8% 64 6250 13 8% 6% 6800 19 8% 5% 8000	CAMAS - BEAVER CREE	K 27 13H 38E 6700	15F3A 1 Read Greek 15F5A 1 Brinity Hountain	5 5N 8E 6800 7 3N 9E 7400	PALOUSE RIVER 1606 1 rmarine Greek	24 40% SV 3500
1/31 N 77 Monotati	33 15K 19V 6600	12E3 1 Camp Creek 11E12 I Kilgore	21 13% 36E 6800 6 12% 39% 6200	1;File 1 Willow Greek Cabin OWYHEE RIVER	26 1W 6E 4710	1603 1 East Tvin 1605 I Howard Creek	13 40% 57 4000 14 40% 58 3500 18 40% 42 4800
BATTERROOT RIVER 13016 M Ambrose	28 9N 15V 6175	MEDICINE LODGE CREE	EK 2 13W 33E 7035	1655 1 Antelope Ridge 1875 0 Barren Velley	20 65 1E 5900 26 2°S 38E 4200	1602 I Mostov Mountain 1604 I West Tvin	16 43W 42 4800 14 40W 5V 4200
1901 M East Fork Hanger Station 1902 M Gibbons Pass	16 28 179 5400 4 25 199 7100	IZES : Webber Creek	23 129 312 6700	ISON I Bettle Creek	10 118 1E 5700 30 45N 56E 6700	BEAR RIVER	7 27M 117W 6700
15018m M Gibbons Pass 1407 M Los Rorse 1402 M Wesperce Camp	4 25 19V 7200 5 48 27V 5940 19 15 27V 5580	BEACKFOOT RIVER 1153 : Austin Brothers Ranch 11529 : China Est	28 7S LJE 6450 17 7S 42E 6300	170km 0 Blue Mountain Page (Resque 16010s 1 Bull Pasin 1881 K Diesster Page	4 388 42E 1220 29 173 6W 5600 8 47N 34E 6500	11511 I Christerson Ranch 11012 I Out River Bunger Station	27 135 41E 5600 5 155 41E 5400 19 88 4E 8230
1303 M Skelkaho Sumit	30 68 178 7259 32 58 23V 6510	1105 I Slug Creek Divide	17 75 42E 6300 15 106 44E 7225 25 53 43E 7000	18024 O Fish Cress 1802 O Folly harm Sammit	4 338 337 7990 8 308 38E 445	11H134P 0 Dry Breat Fond 1157H I Emigrant Summit 1157 1 Emigration Canyon (mouth)	19 69 45 8230 2) 525 425 7350 24 325 428 6000
FLATHEAD RIVER		PORTNEUF RIVER		15:07 N Fry Canyon 15:5 N Gold Craek	31 42N 54E 6700 31 4AR 56E 6600 22 24N 99E 7800	1102M 1 Franklin Basin 11H7P U arden City Summit	1 165 41E 8000 35 1 ₄ 3 4E 7600
1391/A M Basin Greek 1/B3 M Bassoo Feak	11 19W 12W 5000 11 24W 25W 5150	1205M 1 Despeay Creek 1207m I Lover Deepsey 1205m I Lover Peosie	17 108 38E 6280 5 108 38E 5210 7 88 38E 5800	17H; R Granite Peak 16Gts I Egio Peature 16H4 N Jacks Peak	22 449 39E 7800 SET 31 88 2V 5800 28 42E 53E 8420	1036 U Goodman Ranch 1037 U Harden Fore	19 JW 10E 7700 1 15 9E 7300 13 26W 11EW 6200
3383 M Sig Greek 13A17 M Camp Misery 13A24 M Desert Mountain	7 22W 18W 6750 30 28W 38W 6400 24 31W 19W 5600	1200 1 Mink Creek 1200M I Febble Creek	3) 78 3LE 6300 34 78 37E 6550	1703e O Jordan Valley 1605 N Laurel Drev	2 308 46E 4390 40 45E 53E 6750	10012 by Kelly Ranger Station 11H12P U Honte Cristo R. S. 10010 by Piney LaBarge x	3 88 4E 8960 19 298 1149 8820
1931 M Fetty Creek 1237 M Cost Momitain	4 22% 18% 5500 20 22% 10% 7000	RAFT RIVER		175% O Lockout Butte 175% O Louse Canyon 17E2 W Lower Buckskin	2 408 47E 5650 77 408 44E 6440 25 45E 39E 6700	10117P U Stillwater Comp 11010 I Strawberry Mink Divide	32 2W 10E 8550 14 13S 41E 6600
HAR M Griffin Greek Divide MAR M Rell Roaring Divide 137134 M Holbrook	11 28# 25W 5150 35 32# 22W 5770 18 21# 13W 4530	1302A I Boy Stouf Camp 13H2A U Clear Creek Meadowe 1396* I Conner Pane	12 145 238 7600 26 148 149 9050 35 129 258 5700	1641H W Lower Jack Creek 1783 W Martin Creek	25 45K 79E 6700 18 42K 53E 6800 16 44K 49E 6700	110 H 1 Strawterry Greak 1101P 1 Willow Flat	9 138 41E 5800 2 155 41E 6100
Liki M Elshemeinn Liki M Logen Greek	14 37H 22N 3886 34 30H 24H 4300	1301m 1 Howell Canyon 13H1 U One Kile Summit	2 13S 2LE 8000 14 14M 14W 7330	1683 N Midaa 1697K ? Mud Flas	16 37W 46Z 72NO 34 98 2W 5500	MALAD RIVER 1704 I Dry Greek Flot	31 138 3°E 6350
13ASM K Maries Pees 13A16 M Mineral Greek 13A13 M Quintonkon	34 30W 14W 5250 29 35W 37W 4000 11 26W 17W 3800	130M : Sheep Rollow 130M : Sublett 134A I Samit Springs	4 145 24E 6200 8 125 30E 6000	176fs O Gregon Canyon 1786s W Quinn Ridge 16011s i Red Canyon	9 408 4.E 6950 9 47N 41E 6300 32 118 4V 6650	1963 I Orford Hountain	32 135 372 6800
1382 M Spotted Bear Mountain 13810 M Strawberry Leke	23 25% 15V 7700 11 22% 15V 6500	GOOSE - TRAPPER CREE	15 138 30E 6500	I5%N N Rodeo Flat 16F3 I Silver City	3h 434 53E 6800 h 58 3W 6400	MONTPELIER CREEK 11516 I Givernt 17517s I Sivernt Page	35 113 452 6642 2 125 453 725
1331 M Orinkus Lake 15412 M Orout Lake 13911 M Owin Oresks	9 25W 17W 6500 21 28W 17W 3600 14 26W 16W 3580	1403M I Bedger Gulch 1431A I Bostetter Ranger Station	24 155 19E 6660 35 145 19E 7500	1801MA O Silvies 1661 I South Mountain 167te I Succor Creek	35 323 33E 6900 35 78 5V 6343 25 33 5V 6101	114198 I Jenson March 11420 I Little Beaver	15 125 45E 6580 26 115 45E 6770
1335 M Upper Bolland 1233 M Wrong Bidge	14 26W 16W 3580 28 20W 16W 7000 17 25W 17W 6800	1383a U VI Pont	2 158 20E 5300 17 148 179 7670	15HW W Taylor Canyon 15HB W Tresevan Ranch	35 33 5W 6100 35 3 dl 53E 6400 9 398 55E 5700	11018 I Montpeliar Creek 11021 I Whiskey Flat	22 128 45E 65TO 26 118 45E 6465
SPOKANE RIVER		SALMON FALLS CR 8 15HLMA N Bear Greak	RUNEAU RIVER 31 46N 58E 7800	16GAM I Triangle 185ta O Trout Creek	제 25 75 3일 5150 10 415 36로 7년00		
1527 : Above Burke 1527 : Above Boland	11 42W 5E 4160 35 47W 6E 4350	1405A 1 Cedar Creek 1404M 1 Deadline 15E2 N Fox Creek	25 153 13E 7000 25 148 18E 4990	17H1 N Upper Buckekin 16F7 N Upper Seck Creek 1807a O "Y" Lake	11 458 37E 7200 9 428 53E 7250 31 3545 32 3/4E 6600		
1596 : Belov Roland 1682 : Copper Ridge 1683M : Fourth of July Summit	34 478 6E 3770 6 & 7 50W 1W 4800	15H2 H Fox Creek 15H3A H Soat Creek 15H3A H dumingbird Springs	33 46N 58E 6600 31 46N 60E 8800	PAYETTE RIVER	31 35/8 32 3/4E 6600		
1685A I Rellogg Peak 1522M 1 Lookest	6 49W 1W 3100 19 4EW 3Z 5560 4 47W 6Z 5250	1480 N Jakea Crosk 1462 1 Magic Mountain	6 45% 67E 8945 6 42% 67E 7000 : 14 148 18E 6700	15EM 1 Big Creek Sumils 15FM 1 Bogus Basin	24 15H 5E 6608 16 5H 3E 6120	LEGEND	
16E1 Lover Sands Greek 16E41 Mosquito Ridge	32 51W 1W 3199 5 54W 22 5110	15Glm 1 Patrice Ranch 15Gld W Pole Creek Ranger Station	23 153 12E 1720 13 46N 59E 8330	1500 I Cory Cove 1500 I Crewford Ranger Station 1500 I Deadwood Airstrip	19 11H 7E 5900 21 14H 4E 4800 8 11H 7E 5770	Numbering System (e	nample)
15912 Orther Creek 1595A : Boland Sumit 1601 : Stervin	19 4AN 5E 3750 26 47N 6E 5200	15HDE: W Red Point 15H3A W Seventy SIx Creek 1496 I Shoshone Basin	15 47W 61Z 7940 6 44W 59Z 7100 24 145 17Z 5740	15E7 I Dandwood River Dam 15E4A I Dendwood Summit	6 11N 7E 5440 6 11N 7E 5790 23 14N 7E 7000	10/F SHOW COURSE ONLY FOUTS SHOW COURSE AND EMECIALITATION	
1589A : Sunset	28 & 33 42W 1E 3200 28 49W 5E 5500	1502a I Wilson Greek	24 145 17E 5740 24 165 12E 7500	I6E/a 1 Greenfield Flat I6EL I High Valley Summit	1 13N 2E 7370 9 10N 2E 5170	10 J1M SHOR COURSE AND SOIL MOSETURE TOUTA SHOR COURSE AND REDIX MARKES	
SNAKE RIVER - WYOM	ING 30 228 1187 6200	INTILE LOST RIVER	31 7K 28E 5400	15K1 1 Lake Fork 16K1 1 Rock Flat Summit 15D2A 1 Squay Manicy	3 18N 4E 6000 1 18N 2E 5200 5 21H 4E 5800	103FNA Shoe Course, soil woisture ata 103FRP Seon Course, sois mointure ata 103En Soil mointure Station Only	
1981 VY Arizona 1982 VY Aster Crees 1982 VY Base Camp	3 46W 115V 6890 44°17' 110°3E 7700	1325% I Fairview Guard Station 1325% I Little Lost East 1323 I Lost-Garfield	27 12H 26E 6750 36 11H 26E 6640	1623 1 Triped Summit	3 21H 4E 5800 17 11H 3E 5200	10118 \$10048E BBECIBITATION BANK OUT	
1007 WY Placerock 1002A WY Blind Bull	20 45N 113V 6900 4 44N 111V 8600 6 34N 115V 8750	13E5 I Moonahine 13ELCs I Hisland's Draw	31 13N 26E 7450 26 11N 25E 6400	WEISER RIVER 1601 I Boulder Creek	15 20N 1W 5500		
15714 W Bryan Flat	9 388 1159 6250	1)E4 I Seweill Conyon 13E7MA 1 Wet Creek Summit	17 12# 26# 6900 15 8H 25% 8175	167/m I Mica Ridge 1625m I Squaw Flat 1672 I Plecor Creek	15 158 2E 6800 32 178 2E 6230		
					15 # 16 I7N 3W 6000		

Agencies Assisting with Snow Surveys, etc.

GOVERNMENT AGENCIES

Canada:

Department of Lands, Forests, and
Water Resources, British Columbia
Department of Resources and Development,
Water Resources Division

States:

Idaho State Reclamation Engineer
and Corps of State Watermasters
State of Idaho Department of Fish and
Game
University of Idaho
Idaho State College
Montana Agricultural Experiment Station
Montana State Water Conservation Board
Nevada Cooperative Snow Surveys
Oregon Agricultural Experiment Station
Oregon State Engineer and Corps of
State Watermasters
Utah Cooperative Snow Surveys

Federal:

- U. S. Army Engineers
- U. S. Department of Agriculture
 Forest Service
 Agricultural Research Service

Wyoming Cooperative Snow Surveys

- U. S. Department of Commerce Weather Bureau
- U. S. Department of the Interior
 Bonneville Power Administration
 Bureau of Reclamation
 Fish and Wildlife Service
 Geological Survey
 Indian Service
 National Park Service
 Bureau of Land Management

PUBLIC UTILITIES

The Montana Power Company Washington Water Power Company Idaho Power Company Utah Power and Light Company

ORGANIZED PUBLIC AGENCIES

Big Lost River Irrigation District
Boise Project Board of Control
Little Wood River Irrigation District
Jordan Valley Irrigation District
Salmon Falls Creek Irrigation Company
Twin Falls Soil Conservation District
Twin Lakes Irrigation Company
Big Wood Irrigation Company
Owyhee Project - North & South Board of Control

PRIVATE CORPORATIONS

Amalgamated Sugar Company

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